

White Sweetclover



Melilotus alba Medik.

Alternate Names

White melilot, honey clover, honey-lotus, tree clover, white millet

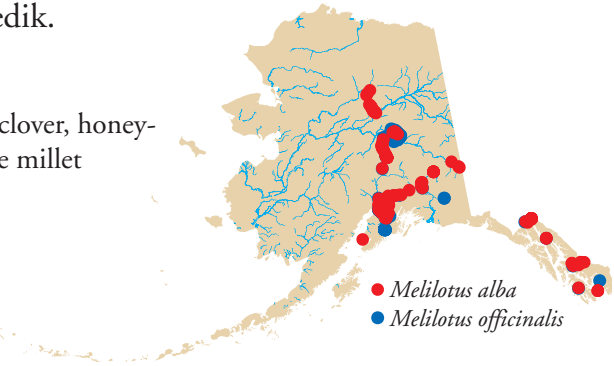
Synonyms

Melilotus albus Medik.

Related Species

Yellow sweetclover

Melilotus officinalis (L.) Lam.



Description

White sweetclover is a biennial plant that can reach 2–5 feet tall and is often branched. Leaves are trifoliate, alternate in arrangement, and ½–2 inches long. The fragrant white flowers are ⅛–¼ of an inch long and arranged in many-flowered terminal and axillary racemes. Plants generally flower and die during the second year of growth. Flowering occurs from June to October. Seed pods are black to dark grey and single-seeded, and the yellow seeds are ovate to kidney-shaped.



White sweetclover flowers.

UAF Cooperative Extension Service photo by Jamie Snyder

Similar Species

White sweetclover is erect, tall, and branching, separating it from all other trifoliate legumes in Alaska except yellow sweetclover. White sweetclover is distinguished from yellow sweetclover by the presence of white rather than yellow flowers, but otherwise they share most botanical characteristics. The information that follows for white sweetclover generally applies to yellow sweetclover as well.

Ecological Impact

Outside of Alaska, white sweetclover degrades natural grassland communities by overtopping and shading native species. If the plant is harvested for hay and is not cured properly, it can contain coumarin, a substance toxic to animals (CUPPID 2003). White sweetclover is visited by introduced honeybees, native solitary bees, wasps, and flies (Eckardt 1987) and associated with 28 plant viruses (Royer and Dickinson 1999). This species alters soil conditions by fixing nitrogen and also has the potential to alter sedimentation rates of river ecosystems (M. Shephard, pers. comm. 2004). White sweetclover has formed large monospecific stands along rivers in southeast, southcentral, and interior Alaska.



USDA Forest Service photo by Michael Shephard

A white sweetclover infestation along Alaska's Stikine River.

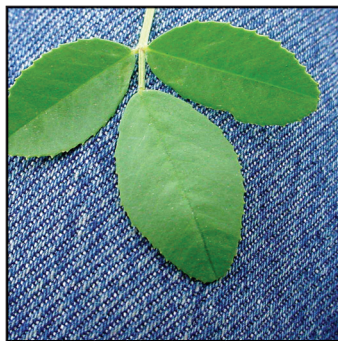
Biology and Invasive Potential

Each white sweetclover plant is capable of producing up to 350,000 seeds that can remain viable in the soil for up to 81 years (Klemow and Raynal 1981, Royer and Dickinson 1999). Large seed banks are common, and it can self-pollinate as well as outcross (Eckardt 1987). White sweetclover readily invades open areas. Natural or human-caused

Family: Fabaceae

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fires produce excellent growing conditions by scarifying seeds and stimulating germination. Forest clearings are easily colonized. White sweetclover establishes extensively along early successional river bars in Alaska, while yellow sweetclover may not be as capable of doing so. In mild climates, white sweetclover resprouts readily when cut or grazed. Seeds may be dispersed by water (Eckardt 1987). It is used extensively as a forage crop, soil builder, and nectar source for honeybees (Eckardt 1987, WDNR 2003b). It is a common contaminant of cereal grains and can also be dispersed by vehicle tires (Densmore et al. 2001, Royer and Dickinson 1999). White sweetclover has high seed germination rates, and most germination and development occurs in spring. Temperatures of less than 59°F are optimal for germination. Sweetclover is adapted to pH levels ranging from 5.0 to 8.0 and all soil textures. It is also moderately salt-tolerant. It is shade-intolerant and does not require cold-stratification for germination. It withstands temperatures to -60°F in Alaska and requires 120 frost-free days for reproduction elsewhere. White sweetclover is listed as an “exotic pest” in Tennes-



XID Services photo by Richard Old

Trifoliate sweetclover leaf.



National Park Service photo by Jeff Heys

Yellow sweetclover.

see, “ecologically invasive” in Wisconsin, and a “weed” in Kentucky and Quebec.

Distribution and Abundance

White sweetclover was brought to North America as early as 1664 as a forage crop. Since then, it has spread from cultivation and thrives in waste places and roadsides. White sweetclover is found in every state in the United States and all but 2 Canadian provinces (Royer and Dickinson 1999). It establishes in aspen woodlands and prairies in Canada and the lower 48 states (Butterfield et al. 1996) and riparian communities in Alaska. Extensive infestations of white sweetclover have been found on the Stikine, Nenana, and Matanuska Rivers, and it and yellow sweetclover are increasingly common and spreading in communities and along roadsides throughout the state, especially in areas of recent construction and road maintenance. White sweetclover is native throughout central Eurasia from the Mediterranean region to Tibet. It has been introduced into South Africa, North and South America, New Zealand, Australia, and Tasmania.

Management

White sweetclover can be managed using mechanical controls such as pulling and cutting, but several treatments will be necessary each year until the seedbank is exhausted. Preliminary results from interior Alaska suggest that cutting second-year (flowering) plants at 1 inch or less in height and pulling first-year plants along with several inches of belowground material would provide effective control (J. Conn, pers. comm. 2005). If first-year plants are cut, they will resprout in the same year and could be cut again at a later time. In Skagway, cutting has not provided effective control. Burning has been used in the midwestern states to stimulate germination, followed by



Photo by Wendy Van Dyk Evans

Leaves and flowers of yellow sweetclover.

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a second burn to eliminate seedlings, but attempts to recreate this effect in Alaska have been unsuccessful (J. Conn, pers. comm. 2005). Biological control options have not been investigated because the plant is valued as a forage crop. Due to the long viability of seeds, sites must be monitored for many years following control actions (Eckardt 1987).

Notes

White and yellow sweetclover are considered valuable honey plants. They are frequently cultivated for animal forage.



UAF Cooperative Extension Service photo by Jamie Snyder

Mature white sweetclover plant.